

雲端再生能源智慧調度創新前瞻計畫

執行單位

財團法人資訊工業策進會

計畫主持人

吳瑞明

- 發展雲端再生能源智慧調度技術，搭配電力公司費率，整合太陽光電、用電監測、可控負載、儲能設備，提供用戶最佳經濟調度控制服務，實際運用於中山大學，初估年回收率約10%附近

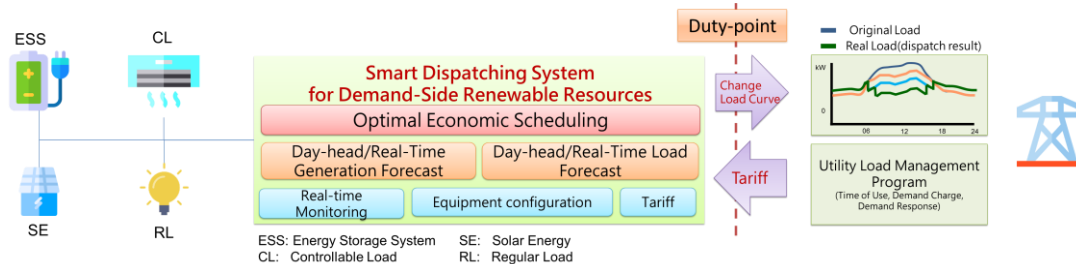
- 產出兩項發明專利
 - ◆ 適應性(Adaptive)蓄電池削峰放電控制技術
(Adaptive control of battery discharge for peak load shaving)
 - ◆ 提供多服務的蓄電池控制方法
(Control of battery for providing multiple services)



儲能系統



中山大學太陽光電停車場



系統架構圖

● 應用情境

- ◆ 再生能源智慧調度系統包括能源資訊平台與經濟調度應用兩大技術。整套系統搭配電力公司費率方案，整合太陽光電、用電監測、可控負載、儲能設備，提供用戶最佳經濟調度控制服務。

● 技術突破

- ◆ 應用適應性蓄電池削峰放電控制即時調度控制，作為即時彈性運轉控制的核心元件，經場域實證可提升調度運轉效益 **19.24%**
- ◆ 提供削減尖峰負載(Peak Shaving)、尖離峰負載移轉(Load Shifting) 以及需量反應等多重服務，發揮綜效、獲得最大經濟效益

● 產業效益

- ◆ 可降低流動電費、契約容量，以及獲取需量反應獎勵，整套系統實際運用於中山大學，初估年回收率約**10%**附近，配合用戶自發自用模式，為用戶獲取最大成本回收效益，此技術已技術移轉至國內太陽光電SI廠商，進行商業模式試煉

Cloud-based Smart Dispatching for Renewable Energy Resources

Execution Unit

Institute for Information Industry

Project Director

Raymond Wu

- Develop cloud-based smart dispatching technology for renewable energy Resources. In consideration of utility tariff, the entire system provide users with the best economic scheduling control services by integration of solar photovoltaic, controllable load, energy storage equipment. In our field trial, the annual return of investment rate is about 10%.

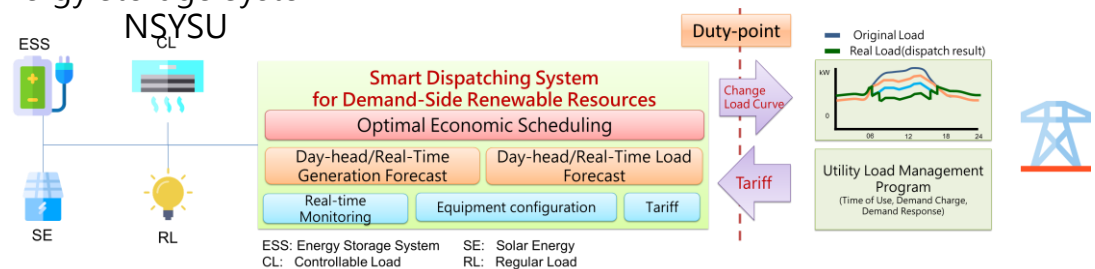
- Develop two patents
 - ◆ Adaptive control of battery discharge for peak load shaving
 - ◆ Control of battery for providing multiple services



Energy Storage System in NSYSU



Solar Panel Parking Lot



System Architecture

- Scenario
 - ◆ Renewable energy intelligent dispatch system includes two major technologies: energy information platform and economic dispatch. In consideration of utility tariff, the entire system provide users with the best economic scheduling control services by integration of solar photovoltaic, controllable load, energy storage equipment.
- Technological Breakthrough
 - ◆ Using adaptive energy storage discharging control for core technology of real time flexible operation control, this system can improve the operational efficiency 19.24% in our field trial.
 - ◆ Provide multiple services such as Peak Shaving, Load Shifting and Demand Response to maximize economic benefits
- Benefit
 - ◆ This system can reduce the energy charge and demand charge, and receive demand response incentives. The whole system actually is running in National Sun Yat-Sen University(NSYSU) in Kaohsiung. The estimate of annual savings achieve more than 2 million dollars, means the annual return of investment rate is about 10%. This system can cooperate with Self-Use Solar PV to obtain the maximum cost recovery benefits.
 - ◆ This technology has been transferred to the domestic solar photovoltaic SI manufacturers for business model trials.